

Application No.: 10/761,101
Attorney Docket No. 1999U026.RE.US
Final Response dated: June 24, 2008
Reply to Office Action: August 22, 2008

LISTING OF CLAIMS

The following amendments to the claims include amendments previously presented, and are again submitted as set forth in 37 CFR 1.173(g) to be relative to the patent, and are not submitted relative to any prior amended version of the claims.

1. (Currently Amended) A process for polymerizing olefin(s) comprising, combining said olefin(s), a catalyst composition having a first catalyst [system] component comprising a Group 15 containing [bidentate or] tridentate ligated Group 3 to 7 metal compound wherein the Group 3 to 7 metal atom is bound to at least one leaving group and to [at least two] three Group 15 atoms, and wherein [at least one of the at least] two of the Group 15 atoms [is bound to a group 15 or 16 atom] are each bound to the third Group 15 atom through a bridging group; and a second catalyst [system] component,

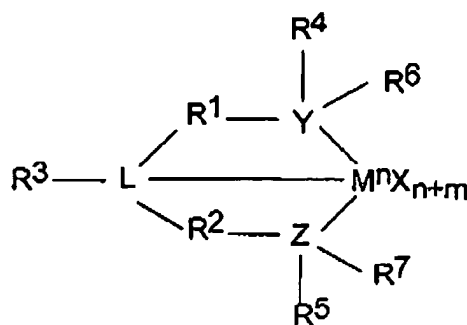
wherein said second catalyst component is a metallocene compound;

wherein said first catalyst component and said second catalyst component are added to a polymerization reactor in one of a solution, a suspension or an emulsion;

wherein the polymerization process is a continuous gas or slurry phase process, and

wherein the Group 15 containing tridentate ligated hafnium catalyst compound is represented by the formula:

Application No.: 10/761,101
 Attorney Docket No. 1999U026.RE.US
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Formula (I)

wherein M is a Group 3 to 7 metal;

each X is independently a leaving group;

n is the oxidation state of M;

m is the formal charge of the Y, Z and L ligand;

L is a Group 15 element;

Y is a Group 15 element;

Z is a Group 15 element;

R¹ and R² are independently a linear, branched, or cyclic C₂ to C₂₀ alkylene group;

R³ is a hydrocarbon group, hydrogen, a halogen, or a heteroatom containing group;

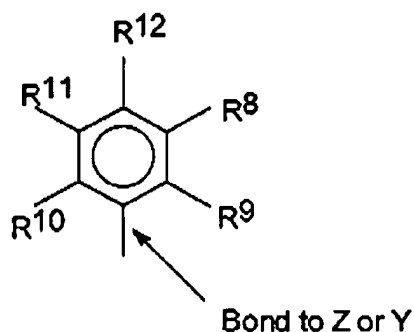
R⁴ and R⁵ are independently an alkyl group, an aryl group, substituted aryl group, a cyclic alkyl group, a substituted cyclic alkyl group, a cyclic arylalkyl group, a substituted cyclic arylalkyl group or multiple ring system;

R¹ and R² may be interconnected to each other, and/or R⁴ and R⁵ may be interconnected to each other; and

R⁶ and R⁷ are independently absent, or hydrogen, an alkyl group, halogen, heteroatom or a hydrocarbyl group.

Application No.: 10/761,101
Attorney Docket No. 1999U026.RE.US
Final Response dated: June 24, 2008
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2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Currently Amended) The process of [claim 6] Claim 1, wherein R^4 and R^5 are represented by the formula



wherein

R^8 to R^{12} are each independently hydrogen, a C_1 to C_{40} alkyl group, a halide, a heteroatom, a heteroatom containing group containing up to 40 carbon atoms, wherein any two R groups may form a cyclic group and/or a heterocyclic group, and wherein the cyclic groups may be aromatic.

8. (Currently Amended) The process of claim 7 wherein [R^9 , R^{10} , and R^{12}] R^8 to R^{12} are independently a methyl, ethyl, propyl or butyl group.

Application No.: 10/761,101
 Attorney Docket No. 1999U026.RE.US
 Final Response dated: June 24, 2008
 Reply to Office Action: August 22, 2008

9. (Currently Amended) The process of claim 8 wherein $[R^9, R^{10}, \text{ and } R^{12}]$ R^8 to R^{12} are methyl groups[, and R^8 and R^{11} are hydrogen].
10. (Currently Amended) The process of claim 9 wherein M is a Group 4 metal, L, Y, and Z are independently nitrogen, R^1 and R^2 are a C_2 to C_6 hydrocarbon radical, R^3 is hydrogen, and R^6 and R^7 are absent.
11. (Cancelled)
12. (Currently Amended) The process of claim [2] 1 wherein the second catalyst [system] component comprises a [bulky ligand] metallocene compound of the general formula $[L^D MQ_2(YZ)X_n]$



wherein M is a Group [3 to 16 metal] 4, 5 or 6 metal atom,

$[L^D$ is a bulky ligand that is bonded to M,]

L^A and L^B are selected from the group consisting of cyclopentadienyl, tetrahydroindenyl, indenyl, fluorenyl, and substituted versions thereof, L^A and L^B are each bonded to M;

each Q is a [univalent anionic ligand bonded to M] monoanionic leaving group,

$[Q_2(YZ)$ forms a uncharged polydentate ligand;]

$[n$ is 1 or 2]

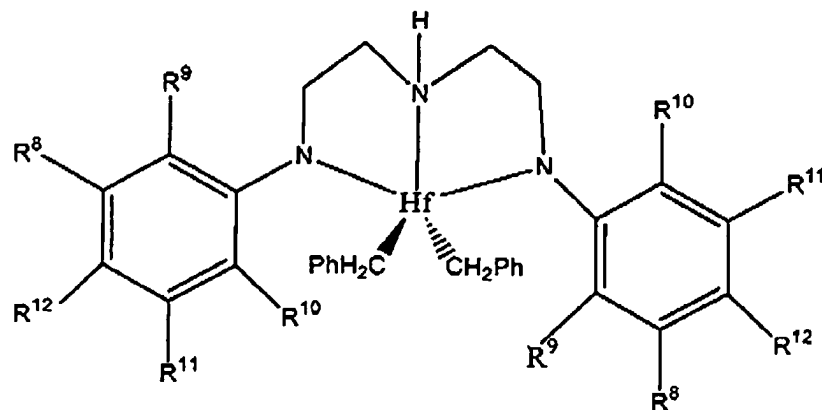
A is a divalent bridging group containing at least one Group 13 to Group 16 atom; and

n is 0, 1 or 2.

- 13.-14. (Cancelled)
15. (Currently Amended) The process of claim 12 wherein M is a Group 4 metal [and L^D is an indenyl group or a fluorenyl group].
16. (Cancelled)

Application No.: 10/761,101
Attorney Docket No. 1999U026.RE.US
Final Response dated: June 24, 2008
Reply to Office Action: August 22, 2008

17. (Currently Amended) The process of claim 1 wherein the catalyst [systems comprise] composition further comprises an activator.
18. (Cancelled)
19. (Original) The process of claim 1 wherein the olefin(s) are ethylene and one or more other olefin(s).
20. (Currently Amended) The process of claim [2 wherein the Group 15 containing bidentate or tridentate ligated Group 3 to 7 metal compound and the bulky ligand metallocene compound] 1 wherein said first catalyst component and said second catalyst component are present in a molar ratio of 1:99 to 99:1.
21. (Currently Amended) The process of claim [2 wherein the Group 15 containing bidentate or tridentate ligated Group 3 to 7 metal compound and the bulky ligand metallocene compound] 1 wherein said first catalyst component and said second catalyst component are present in a molar ratio of 20:80 to 80:20.
- 22.-48. (Cancelled)
49. (New) The process of Claim 1, wherein the Group 15 containing tridentate ligated Group 3 to 7 metal compound is represented by the formula:



wherein R⁸ to R¹² are each independently a methyl, ethyl, propyl, or butyl group.